1	TITLE
2	Electric Hairdressing Device
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4	CROSS REFERENCE APPLICATIONS
5	This application claims priority from German
6	application no. 203 01 400.6 filed Jan. 30, 2003.
7	
8	FIELD OF INVENTION
9	The present invention relates to an electric
10	hairdressing device having multiple hair curlers with a heat
11	store, a container for storing and heating the hair curlers
12	and a heating device. The invention further relates to a
13	hair curler, in particular for use with such a hairdressing
14	device.
15	
16	BACKGROUND OF THE INVENTION
17	Prior art electric hairdressing devices have a storage
18	container to store hair curlers. Each hair curler has one
19	heat store, which is formed by a metal body, for example of
20	aluminum. Encompassing the heat store the hair curlers have
21	a synthetic shell with a rough surfaces formed of flocking
22	or by projecting synthetic hooklets extending from a
23	synthetic grid. Such a hairdressing device also has a
24	heating device comprising at least one heating element.
25	According to prior art the heat store for heating the hair
26	curlers is freely accessible via a end section. The hair
27	curler is brought into contact with this end section on a
28	complementarily developed element of the heating device.
29	The hair curlers are held in the storage container one lying

- 1 next to the other and with both end sections in a hair
- 2 curler receptacle under pre-stress. This prevents the hair
- 3 curlers from rolling out and ensures the hair curlers are in
- 4 good contact with their thermal contact face on the heating
- 5 device or the heating element giving off heat.
- 6 To employ such a hairdressing device the hair curlers
- 7 are first heated, and then individually manually removed
- 8 from the storage container, rolled into the hair or strand
- 9 of hair to be dressed and subsequently secured with a clasp.
- 10 To remove the hair curlers from the storage container, the
- 11 curler is most often grasped with one hand at its two end
- 12 sections. Care must be taken in this process to not touch
- 13 the exposed hot surface of the heating device or of the
- 14 heating element is.
- In order to achieve a good set of the curl, the hair
- 16 curlers must be left in the hair for a considerable length
- 17 of time. Specifically, until the majority of the heat in
- 18 the heat store of each hair curler has been transferred to
- 19 the hair to be shaped. However, this time period is
- 20 occasionally considered to be too long.
- Building on this discussed prior art, the present
- 22 invention addresses the problem of developing a hairdressing
- 23 device in which the handling of the hair curlers is improved
- 24 so that the danger of unintentional touching of a heating
- 25 element is avoided, but with which the desired hair shaping
- 26 process can be completed more rapidly.

SUMMARY OF THE INVENTION

- The primary aspect of the present invention is to
- 30 provide a hair dressing device in which the individual hair

- 1 curlers can be heated to a higher temperature since they are
- 2 not handled by bare hands.
- 3 Other aspects of this invention will appear from the
- 4 following description and appended claims, reference being
- 5 made to the accompanying drawings forming a part of this
- 6 specification wherein like reference characters designate
- 7 corresponding parts in the several views.
- 8 In the present invention each of the hair curlers has a
- 9 heat store with a heating element receptacle, with which a
- 10 hair curler can be detachably placed onto a heating element
- 11 of the storage container with one end section freely
- 12 accessible. The hairdressing device has an application
- 13 handle for grasping and rolling one hair curler from the
- 14 storage container in a torsion-tight configuration. The
- 15 application handle has a pivotably articulated hair curler
- 16 finger for holding a strand of hair between the hair curler
- 17 finger and the surface of a hair curler.
- The heat store of each hair curler comprises a
- 19 receptacle for receiving a heating element such that each
- 20 hair curler can be placed onto a heating element. The
- 21 surface serving for placing against the hair can be smooth
- 22 or formed for example by flocking. A hair curler can,
- 23 consequently, be held upright in the container such that a
- 24 end section of the hair curler is freely accessible at the
- 25 top. The heating elements of the heating device of the
- 26 storage container can be peg-like attachments of a larger
- 27 heating element with which several hair curlers or their
- 28 heat stores can be heated. The preferred embodiment has a
- 29 separate heating element for each hair.
- The heating element receptacle of each hair curler can
- 31 be a sleeve-form receptacle so that the heat store

- 1 circumferentially encompasses the heating element and the
- 2 two are in contact on the inside of the receptacle. This
- 3 reduces the needed heating energy. Further, by providing
- 4 individual heating elements for each hair curler, the size
- 5 of the individual heating elements can be adapted to the
- 6 size of the heated hair curler. Consequently, larger hair
- 7 curlers with a larger heat store can be placed onto a larger
- 8 heating element. The hairdressing device in such an
- 9 embodiment gets all of the different sized hair curlers to
- 10 the specified hairdressing temperature in approximately the
- 11 same amount of time.
- 12 With the described storage configuration of the hair
- 13 curlers placed onto a heating element with one end section
- 14 of the hair curlers being freely accessible, the heating
- 15 element(s) can be located in the interior of the storage
- 16 container such that only the free end section of a hair
- 17 curler is accessible at the top. This reduces the danger is
- 18 that the heating element is unintentionally touched when
- 19 handling the hair curlers.
- Lastly, this hairdressing device also has an
- 21 application handle to grasp and remove one hair curler at a
- 22 time from the storage container and to assist in wrapping
- 23 the strand of hair. Using the application handle means that
- 24 the hot hair curlers do not need to be touched by hand.
- 25 Additionally, the application handle has a hair curler
- 26 finger for holding a hair strand between the hair curler
- 27 finger and the surface of a hair curler. Once a hair curler
- 28 has been removed from the storage container using the
- 29 application handle, the hair curler can readily be wrapped
- 30 into the hair by inserting a hair strand under the hair
- 31 curler finger, which pivot on the application handle.

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1.
          The application handle can also be used for wrapping
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    the hair around the hair curlers. In one embodiment, the
    application handle has a motor drive, so that the grip of
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 4
    the application handle overall does not need to be rotated
 5
    to wrap a hair curler into the hair. The use of the
    application handle has the advantage that the hair curlers
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 7
    can be heated to a higher temperature than would be the case
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    within prior known hair curlers, which are manually rolled
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    into the hair. Using higher temperature hair curlers the
    hair is shaped faster and has a longer lasting effect.
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          It is especially advantageous when the hair curlers
    have a smooth surface, at least in the sections intended for
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    being placed into contact on the hair to be shaped.
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    improves a heat transfer from the hair curler onto the hair
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    so that the hair shaping process can be completed faster.
    Such a hair curler can fundamentally be formed by the heat
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    store itself, for example by a cylindrical aluminum rod.
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         The heating element receptacle of the heat store is
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    disposed along the longitudinal length of the hair curler
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    and penetrates the heat store, if possible, by more than 50%
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    of its longitudinal length. In one embodiment of the
22
    invention each hair curler has a receptacle also following
    the longitudinal length of the hair curler, which is
23
    disposed eccentrically with respect to the heating element
24
    receptacle to connect a hair curler with the application
25
26
    handle.
             The contour of such a receptacle formed to fit
27
    torsion-tight with a complementary element, such as a blade
28
    shape, of the application handle when the element is
29
    inserted in the receptacle.
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         The hair curler can be grasped with the application
    handle when the blade of the application handle is inserted
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- 1 into the receptacle and the hair curler finger, under spring
- 2 tension, is in contact on the outside of the hair curler, so
- 3 that the hair curler is held by the application handle in
- 4 the manner of tongs. In such an embodiment removing the
- 5 hair curler from the blade after wrapping the hair curler
- 6 into the hair is easy with the hair curler finger open. The
- 7 receptacle of each hair curler terminates toward the end
- 8 section of the hair curler which is freely accessible at the
- 9 top when such a hair curler is plugged onto a heating
- 10 element in the storage container.
- The heating element(s) of the heating device are
- 12 usefully disposed in a common chamber of the storage device.
- 13 The chamber can be utilized to treat, for example to wet,
- 14 the hair curlers before they are applied since when the hair
- 15 curlers are plugged onto the heating elements the curlers
- 16 also extend into this chamber, at least partially. The
- 17 storage container can have a vapor generator to generate a
- 18 vapor of a liquid, for example water vapor, if desired.
- 19 Such a vapor generator has a water container with a wick.
- 20 The water container with the wick is removably attached in
- 21 the container with a heating plate disposed opposite the
- 22 wick. If there is the wish to wet the hair curler with
- 23 water vapor the water tank and wick are moved toward the
- 24 heating element until the wick abuts the heating element and
- 25 a dose of water is vaporized. It is also possible to have
- 26 in the common chamber an ionization device to be able to
- 27 coat the outside of the hair curlers with ions. In this
- 28 embodiment the hair curlers have on the outside an
- 29 electrically non-conducting surface coating, for example a
- 30 ceramic coating.

- In addition, the container has a pocket for storing the
- 2 application handle. This allows the application handle and
- 3 the elements for grasping the hair curlers to be heated
- 4 proportionately during the heating process of the hair
- 5 curlers to reduce any undesirable cooling of the curlers to
- 6 a minimum when the hair curlers are grasped with the
- 7 application handle. If chamber of the storage container has
- 8 an ionization device, the hair curler finger can have an
- 9 electrically non-conducting coat and can project into the
- 10 chamber when store and can also be coated with ions like the
- 11 hair curler.

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BRIEF DESCRIPTION OF THE DRAWINGS

- 14 Fig. 1 is a perspective view of an electric hairdressing
- device with a storage container and an application
- handle.
- 17 Fig. 2 is a longitudinal sectional view of the hairdressing
- device of Figure 1.
- 19 Fig. 3 is a perspective view of the opened hairdressing
- 20 device of Figure 1 showing a removal of a hair curler
- 21 with the application handle.
- 22 Fig. 4 is a perspective view of the application handle
- equipped with a hair curler and a hair curler.
- 24 Fig. 5 is a perspective view of the application handle in
- 25 the process of grasping a hair curler.
- 26 Before explaining the disclosed embodiment of the
- 27 present invention in detail, it is to be understood that the
- 28 invention is not limited in its application to the details
- 29 of the particular arrangement shown, since the invention is
- 30 capable of other embodiments. Also, the terminology used

1 herein is for the purpose of description and not of

2 limitation.

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DETAILED DESCRIPTION OF THE DRAWINGS

5 Referring first to Figure 1, a hairdressing device 1 has a storage container 2, which is closed at the top with a 6 7 pivotably articulated lid 3. The storage container 2 holds 8 a multiplicity of hair curlers L, as seen in Figure 3. 9 hairdressing device 1 has an application handle 4 which can 10 be slid into a pocket 5 of the storage container 2 when not Figure 1 shows the application handle 4 partially 11 slid into the pocket 5. Above the pocket is a grip 12 13 depression 6 for picking up the hairdressing device 1. As seen in Figure 2, the storage container 2 of the 14 15 hairdressing device 1 has an interior chamber 7 which is 16 delimited at the top by an aperture B and by the walls of 17 the storage container 2. The interior chamber 7 has a number of heating elements 8, 8' corresponding to the number 18 of hair curlers L to be stored in the storage container 2. 19 Two heating elements 8, 8', each with a hair curler L, are 20 21 shown in Figure 2. In the depicted example the heating elements 8, 8' have a rectangular cross section and are 22 23 formed of the electric heater proper disposed between two 24 plates. The electric heater can be a resistance heating 25 element or other know heating elements. The individual 26 heating elements 8, 8' are all secured on a plate not shown 27 in the Figures and form blade-like pegs.

In the preferred embodiment, the hair curlers L of the

hairdressing device 1 are aluminum cores with end sections

coated with a synthetic material. The outer surface of the

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- 1 hair curlers L which contacts the hair to be shaped can have
- 2 an electrically non-conducting ceramic coating.
- A heating element receptacle 10 extends axially inside
- 4 the longitudinal length of the heat store of the hair curler
- 5 L from a first end section 9 of the hair curler L. The hair
- 6 curler L shown on the left in Figure 2 is marked with the
- 7 reference symbols. All other hair curlers L of the
- 8 hairdressing device 1 are structured analogously.
- 9 The interior contour of the heating element receptacle
- 10 10 corresponds to the outer contour of the heating element
- 11 8, so that there is circumferential close contact between
- 12 the inside of the heating element receptacle 10 and the
- 13 outside of the heating element 8. The heating element
- 14 receptacle 10 annularly encompasses the heating element 8 to
- 15 ensure essentially all of heat provided by the heating
- 16 element 8 is transferred to the hair curler L.
- The hair curler L also has two additional receptacles
- 18 11, 11' extending the longitudinal extent of the hair curler
- 19 L. The receptacles 11, 11' are eccentrically placed with
- 20 respect to the heating element receptacle 10 and terminate
- 21 in a second end section 12 opposite end section 9 of hair
- 22 curler L. The contours of the receptacles 11, 11' are
- 23 identically dimensioned, and in the depicted embodiment are
- 24 oval in cross section, as seen in Figures 3 and 4. The
- 25 receptacles 11, 11' are used to grasp the hair curlers L
- 26 with the application handle 4 and remove the hair curler L
- 27 from the storage container 2, as shown in Figure 3.
- The storage container 2 can also have a vapor
- 29 generating device 13 with a water tank 14 and a wick 16 near
- 30 a heating plate 15. The water tank 14 and the wick 16 are
- 31 moveable relative to the heating plate 15 so that the water-

- 1 saturated wick 16 can be brought into contact with the
- 2 heating plate 15 to generate a dose of vapor. The vapor
- 3 generated in this way is distributed within chamber 7 and
- 4 wets the sections of the hair curlers L projecting into
- 5 chamber 7. An ionization device 17 can also be placed in
- 6 chamber 7 to generate ions which are deposited on the non-
- 7 conducting outer surface of the hair curlers L.
- 8 In the depiction of Figure 2, the application handle 4
- 9 is completely slid into the pocket 5 of the storage
- 10 container 2.
- 11 The hair curlers L are of differing sizes corresponding
- 12 to the desired requirements. In the depicted embodiment,
- 13 the heating elements 8, 8' are adapted to the size of the
- 14 particular hair curler L to be heated with respect to their
- 15 capacity or their size. The ensures that all hair curlers L
- 16 disposed in the storage container 2 reach the specified
- 17 temperature simultaneously or quasi-simultaneously after a
- 18 heating phase and that the overheating of individual heating
- 19 elements and, accordingly, excessive heating of individual
- 20 hair curlers, is largely avoided.
- When the hairdressing device 1 is used it is first
- 22 turned on so that the hair curlers L inserted in the storage
- 23 container 2 are heated by the heating elements 8, 8'. When
- 24 the heating process is completed, the application handle 4
- 25 can be pulled out of pocket 5 and, after opening lid 3, the
- 26 hair curlers L can be removed singly from the storage
- 27 container 2, as shown in Figure 3. For this purpose the
- 28 application handle 4 has a blade-like extension 18, shown in
- 29 Figure 5, with an oval contour. The extension 19 is
- 30 inserted into a receptacle 11 or 11' of a hair curler L.

- As shown in Figures 4 and 5, the application handle 4
- 2 also has a hair curler finger 19 pivotably disposed on the
- 3 grip 20. The hair curler finger 19 can be moved by means of
- 4 an actuation lever 21. When using the actuation lever 21
- 5 the movement of the hair curler finger 19 takes place
- 6 against the force of a reset spring, not shown, which bias
- 7 the actuation lever 21 to the closed position.
- A sufficient gap exists between aperture B of the
- 9 storage container 2 and the outside of a hair curler L to
- 10 allow the hair curler finger 19 to be inserted into chamber
- 11 7, as shown in Figure 3. A hair curler L is subsequently
- 12 held tongs-like by the application handle 4 and is pulled
- 13 from chamber 7. When wrapping the removed hair curler L the
- 14 hair curler finger 19 is opened, as is shown in Figure 4, a
- 15 strand of hair to be shaped can be placed between the hair
- 16 curler finger 19 and the hair contact surface of the hair
- 17 curler L. By rotating the handle 4 the wrapping proper
- 18 takes place of the hair curler L into the hair. The
- 19 application handle 4 is detached from the wrapped hair
- 20 curler L and secured with a clasp by opening the hair curler
- 21 finger 19 slightly and pulling the extension 18 out of the
- 22 receptacle 11 or 11'.
- To reduce the energy needed for heating a microswitch
- 24 can be provided associated with each heating element 8, 8',
- 25 which is closed when a hair curler is completely placed onto
- 26 the heating element. Such a switch consequently opens
- 27 during the removal of a hair curler so that this heating
- 28 element is subsequently switched off.
- A hair curler L is shown individually in Figure 4. The
- 30 hair curler L has a ceramic coating 22. This coating 22
- 31 provides an electrically non-conducting surface and a smooth

- 1 hair contact surface. Such a smooth surface has a favorable
- 2 effect on the hair shaping process because the hair curlers
- 3 L can easily be removed again from the hair without having
- 4 to deal with entangling hairs. A hair curler 1 that almost
- 5 completely consists of the heat store proper has advantages
- 6 during application and it can be lighter weight, since the
- 7 smooth surface improves the heat transfer to the hair to be
- 8 shaped. The hair curlers are usefully heated to a
- 9 temperature between 90 and 110°C, in particular to a
- 10 temperature between 95 and 105°C. Due to the provision of
- 11 the application handle 4, these relatively hot hair curlers
- 12 can be applied without the hazard of injury.
- 13 Although the present invention has been described with
- 14 reference to the disclosed embodiments, numerous
- 15 modifications and variations can be made and still the
- 16 result will come within the scope of the invention. No
- 17 limitation with respect to the specific embodiments
- 18 disclosed herein is intended or should be inferred. Each
- 19 apparatus embodiment described herein has numerous
- 20 equivalents.

List of Reference Symbols

23

- 24 1 Hairdressing device
- 25 2 Storage container
- 26 3 Lid
- 27 4 Application handle
- 28 5 Pocket
- 29 6 Grip depression
- 30 7 Chamber
- 31 8, 8' Heating element

1	9	End section
2	10	Heating element receptacle
3	11, 11'	Receptacle
4	12	End section
5	13	Vapor generating device
6	14	Water tank
7	15	Heating plate
8	16	Wick
9	17	Ionization device
10	18	Extension
11	19	Hair curler finger
12	20	Grip
13	21	Actuating lever
14	22	Ceramic coating
15		
16	В	Aperture
17	L	Hair curler
18		
19		